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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/579,855	05/17/2006	Takayuki Araki	Q94609	8089
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SUITE 800				
WASHINGTON, DC 20037				
EXAMINER				
JOHNSON, CONNIE P				
ART UNIT		PAPER NUMBER		
1795				
NOTIFICATION DATE		DELIVERY MODE		
08/11/2010		ELECTRONIC		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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### Office Action Summary

**Application No.**

10/579,855

**Applicant(s)**

ARAKI ET AL.

**Examiner**

CONNIE P. JOHNSON

**Art Unit**

1795

**Period for Reply** -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 04 June 2010.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-4, 11-13, 15-18, 21 and 22 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4, 11-13, 15-18, 21 and 22 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB06)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

***Response to Amendment***

1. The remarks and amendment filed 6/4/2010 have been entered and fully considered.
2. Claims 1-4, 11-13, 15-18 and 21-22 are presented.
3. Claims 1, 2 and 13 are amended.

***Claim Rejections - 35 USC § 112***

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:  

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
5. Claims 1-4, 11-12 and 22 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
6. Claim 1 recites in line 6, "polymer (A) has one or more structural units derived from a fluorine-containing ethylenic monomer having the hydrophilic group Y."  
However, the polymer (A) in claim 1 only has 2 components, (M1) and (N1). Component (M1) has 1 hydrophilic group Y (formula 2-1) and (N1) does not have a hydrophilic group. Therefore, based on the formula shown in present claim 1, the polymer (A) may only have one hydrophilic group. So, it is unclear what applicant intends to claim as the invention.
7. Claim 2 recites in lines 2-3, "the hydrophilic group Y further includes -OH."  
However, the Y group in instant claim 1 is -COOH. The Y group cannot contain both-

COOH and -OH simultaneously. It is unclear as to what applicant intends to claim as his invention.

***Claim Rejections - 35 USC § 103***

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

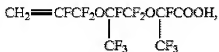
(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 1, 3-4, 11-13, 15-18, 21 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brunsvold et al., U.S. Patent No. 6,057,080 in view of Araki et al., U.S. Patent Publication No. 2003/0152864 A1.

Brunsvold teaches a top antireflective layer comprising an ammonium or amine compound (col. 3, lines 65-67 and col. 4, lines 1-7). Example 5 of the reference shows a method of making a patterned photoresist composition by applying a photoresist to a silicon substrate and overcoating the photoresist with the antireflective film of example 3. Brunsvold teaches using perfluorinated polymers in the top antireflective layer for ease of removal with an alkaline developer. Water is used as a solvent in the antireflective layer as shown in example 2 (col. 4, lines 65-67). The polymer solution has a water content of 95% by weight of the composition. Brunsvold does not teach the fluorinated polymer comprises the structure of formula (2-1) in present claim 1.

Additionally, Araki ('864) teaches fluorinated polymers for resist compositions. The structure I-(2)-2 is representative of formula (2-1) in present claim 1 and is present

in an amount of 1 to 99mol% of the fluorinated polymer (page 16, [0275]). The fluorinated polymers are derived from fluorinated monomers with the following structures:



(page 108, example 26). In example 26,

the copolymer has a repeating unit with a fluorine-containing alkylene group with 4 carbons and an ether bond, the carboxylic acid group is representative of the hydrophilic Y group in formula (2-1) of present claim 1. The fluorine containing allyl ether having a COOH group in example 26 is shown as copolymerized with vinylidene fluoride. Araki does not specifically teach in the examples to copolymerize the allyl ether having a COOH group with tetrafluoroethylene (CF<sub>2</sub>=CF<sub>2</sub>) or chlorotrifluoroethylene (CF<sub>2</sub>=CFCl). However, Araki does teach the fluorinated ethylenic monomers are copolymerized with tetrafluoroethylene (CF<sub>2</sub>=CF<sub>2</sub>), chlorotrifluoroethylene (CF<sub>2</sub>=CFCl) or vinylidene fluoride (page 96, [1418]). Therefore, it would have been obvious to one of ordinary skill in the art to copolymerize the allyl ether having the COOH group with tetrafluoroethylene (CF<sub>2</sub>=CF<sub>2</sub>) or chlorotrifluoroethylene (CF<sub>2</sub>=CFCl) because Araki teaches the compounds as preferred over vinylidene fluoride to polymerize with the fluorinated ethylenic monomers. The compound used in example 26 is representative of formula (2-1) in present claim 1. Therefore, the molecular weight of the compound in example 26 is expected to be within the claimed range. The fluorinated polymers have a molecular weight of 1,000 to 1,000,000 (page 12, [0171]).

The fluorinated polymer may be used in reflection reducing films (page 91, [0324]). It would have been obvious to one of ordinary skill in the art to use the fluorinated polymer of Araki in the antireflective film of Brunsvold because Araki teaches the fluorinated polymer has a high transparency, a low refractive index and has an acid reactive functional group, which is well known to improve solubility in alkali developers (page 101, [1510]).

### ***Response to Arguments***

10. Applicant's arguments filed 6/4/2010 have been fully considered but they are not persuasive.
11. Applicant argues that the Y group is described at page 9 of the specification as having a pKa value of not more than 11, where Y represents one or more hydrophilic groups having an acidic OH group including -COOH, -OH and other groups. Further, that claim 1 does not preclude a composition comprising a fluorine-containing polymer (A) including some units derived from a fluorine-containing ethylenic monomer having the hydrophilic group -COOH and other units derived from a fluorine-containing ethylenic monomer having a hydrophilic group -OH (as claimed in claim 2).

Although page 9 of the specification discloses -OH, -COOH and other acidic -OH groups as the hydrophilic Y group, the language in claim 1 does not allow more than one hydrophilic group in group (M1) of formula (M-1). Group (M1) comprises the formula:

$\text{CH}_2=\text{CFCF}_2-\text{O}-\text{R}^f-\text{Y}$ , wherein Y is the hydrophilic group. Applicant has already disclosed Y as -COOH in lines 9-10 of present claim 1. Therefore, no other Y groups may be attached to the (M1) group. Further, as defined in present claim 1, group (N1) does not include a hydrophilic Y group. Although the polymer (A) may comprise other

groups, applicant has not shown any other formulas in polymer (A) that are additional to (M1) and (N1) in the polymer. Therefore, to disclose the limitation in claim 1, “polymer (A) has one or more structural units derived from a fluorine-containing ethylenic monomer having the hydrophilic group Y” does not provide any basis for present claim 2 to disclose “the hydrophilic group Y further includes –OH.” Based on the language in present claim 2, applicant is claiming that the hydrophilic group Y in formula (2-1) has more than one hydrophilic group, since no other groups have been added to the polymer.

12. Applicant argues that example 26 in Araki comprises a group that is representative of formula (2-1) of present claim 1 which is copolymerized with vinylidene fluoride. Further, that since present claim 1 has been amended to recite specific examples of the (N1) group that does not include vinylidene fluoride, the example 26 is no longer commensurate in scope with present claim 1.

Although claim 26 discloses vinylidene fluoride copolymerized with the allyl ether group containing –COOH, Araki also teaches that tetrafluoroethylene ( $\text{CF}_2=\text{CF}_2$ ) and chlorotrifluoroethylene ( $\text{CF}_2=\text{CFCl}$ ) are preferred copolymerizable groups over vinylidene fluoride with the fluorinated ethylenic monomers (page 96, [1418]).

### ***Conclusion***

13. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to CONNIE P. JOHNSON whose telephone number is (571)272-7758. The examiner can normally be reached on 7:30am-4:00pm Monday thru Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cynthia Kelly can be reached on 571-272-1526. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Connie P. Johnson  
Examiner  
Art Unit 1795

/Cynthia H Kelly/

Supervisory Patent Examiner, Art Unit 1795